1. Solve the equation for x and choose the interval that contains the solution (if it exists).

$$2^{5x+2} = 343^{2x-3}$$

A. $x \in [2, 3.3]$

B. $x \in [-8.6, -4.9]$

C. $x \in [-2.1, -1.4]$

D. $x \in [-1.5, 2]$

E. There is no Real solution to the equation.

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2. Solve the equation for x and choose the interval that contains the solution (if it exists).

$$\log_3(4x + 6) + 6 = 3$$

A. $x \in [-2.3, -1]$

B. $x \in [-8.7, -5.9]$

C. $x \in [3.5, 7]$

D. $x \in [-5.7, -4.9]$

E. There is no Real solution to the equation.

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3. Which of the following intervals describes the Domain of the function below?

$$f(x) = \log_2(x - 7) + 9$$

A. $(-\infty, a), a \in [-8.38, -6.88]$

B. $(a, \infty), a \in [5.99, 7.58]$

C. $(-\infty, a], a \in [-9.2, -7.76]$

D. $[a, \infty), a \in [8.71, 9.45]$

E. $(-\infty, \infty)$

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4. Solve the equation for x and choose the interval that contains the solution (if it exists).

$$3^{-4x-5} = \left(\frac{1}{64}\right)^{2x-2}$$

A. $x \in [1.8, 5.5]$

B. $x \in [-1.3, -0.3]$

C. $x \in [-3.4, -2.2]$

D. $x \in [0.6, 1.7]$

E. There is no Real solution to the equation.

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5. Which of the following intervals describes the Domain of the function below?

$$f(x) = \log_2(x - 7) - 7$$

A. $(-\infty, a], a \in [5, 11]$

B. $(-\infty, a), a \in [-9, -4]$

C. $(a, \infty), a \in [5, 11]$

D. $[a, \infty), a \in [-9, -4]$

E. $(-\infty, \infty)$

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6. Which of the following intervals describes the Range of the function below?

$$f(x) = e^{x-8} - 5$$

A. $(-\infty, a), a \in [2, 6]$

B. $[a, \infty), a \in [-12, 0]$

C. $(a, \infty), a \in [-12, 0]$

D. $(-\infty, a], a \in [2, 6]$

E. $(-\infty, \infty)$

---

7. Solve the equation for x and choose the interval that contains the solution (if it exists).

$$\log_2(-4x+5)+6=3$$

A. $x \in [-4.07, -3.47]$

B. $x \in [-0.77, -0.13]$

C. $x \in [0.46, 1.79]$

D. $x \in [-1.26, -0.96]$

E. There is no Real solution to the equation.

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8. Which of the following intervals describes the Domain of the function below?

$$f(x) = e^{x+1} + 4$$

A. $(-\infty, a], a \in [4, 8]$

B. $(-\infty, a), a \in [4, 8]$

C. $(a, \infty), a \in [-4, 1]$

D. $[a, \infty), a \in [-4, 1]$

E. $(-\infty, \infty)$

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9. Solve the equation for x and choose the interval that contains x (if it exists).

$$15 = \sqrt[7]{\frac{12}{e^{6x}}}$$

A. $x \in [-1, -0.4]$

B. $x \in [-19.6, -17.4]$

C. $x \in [-4.5, -2.3]$

D. There is no Real solution to the equation.

E. None of the above.

---

10. Solve the equation for x and choose the interval that contains x (if it exists).

$$22 = \ln \sqrt[5]{\frac{28}{e^{3x}}}$$

A. $x \in [-38.56, -30.56]$

B. $x \in [-13.56, -10.56]$

C. $x \in [-8.26, -4.26]$

D. There is no Real solution to the equation.

E. None of the above.

---

11. Solve the equation for x and choose the interval that contains the solution (if it exists).

$$2^{3x-2} = \left(\frac{1}{25}\right)^{2x-5}$$

A. $x \in [14.48, 20.48]$

B. $x \in [-4, -2]$

C. $x \in [1.05, 3.05]$

D. $x \in [-1.35, 0.65]$

E. There is no Real solution to the equation.

---

12. Solve the equation for x and choose the interval that contains the solution (if it exists).

$$\log_4 (2x + 6) + 5 = 3$$

A. $x \in [27, 30]$

B. $x \in [5, 10]$

C. $x \in [10, 21]$

D. $x \in [-7.97, -0.97]$

E. There is no Real solution to the equation.

13. Which of the following intervals describes the Domain of the function below?

$$f(x) = \log_2(x+2) + 5$$

A. $(a, \infty), a \in [-2.6, -1.5]$

B. $(-\infty, a), a \in [1, 4.8]$

C. $(-\infty, a], a \in [-5.2, -2.1]$

D. $[a, \infty), a \in [3.6, 6]$

E. $(-\infty, \infty)$

14. Solve the equation for x and choose the interval that contains the solution (if it exists).

$$5^{-3x-5} = 9^{-5x+5}$$

A. $x \in [1.3, 2.9]$

B. $x \in [7.3, 9.7]$

C. $x \in [3.7, 5.7]$

D. $x \in [3, 4]$

E. There is no Real solution to the equation.

15. Which of the following intervals describes the Range of the function below?

$$f(x) = -\log_2(x+4) - 9$$

A. $[a, \infty), a \in [2, 5]$

B. $(-\infty, a), a \in [-14, -8]$

C. $[a, \infty), a \in [-6, 1]$

D. $(-\infty, a), a \in [8, 15]$

E. $(-\infty, \infty)$

16. Which of the following intervals describes the Domain of the function below?

$$f(x) = e^{x+3} - 4$$

A. $(-\infty, a), a \in [-9, 2]$

B. $[a, \infty), a \in [1, 7]$

C. $(a, \infty), a \in [1, 7]$

D. $(-\infty, a], a \in [-9, 2]$

E. $(-\infty, \infty)$

17. Solve the equation for x and choose the interval that contains the solution (if it exists).

$$\log_4(-2x + 6) + 6 = 3$$

A. $x \in [0.99, 3.99]$

B. $x \in [-45.5, -38.5]$

C. $x \in [-29, -27]$

D. $x \in [-38.5, -33.5]$

E. There is no Real solution to the equation.

18. Which of the following intervals describes the Range of the function below?

$$f(x) = -e^{x+2} + 9$$

A. $[a, \infty), a \in [-11, -6]$

B. $(-\infty, a), a \in [7, 14]$

C. $(a, \infty), a \in [-11, -6]$

D. $(-\infty, a], a \in [7, 14]$

E. $(-\infty, \infty)$

19. Solve the equation for x and choose the interval that contains x (if it exists).

$$23 = \ln \sqrt[3]{\frac{28}{e^{8x}}}$$

A. $x \in [-2.59, -0.59]$

B. $x \in [-7.33, -4.33]$

C. $x \in [-8.21, -6.21]$

D. There is no Real solution to the equation.

E. None of the above.

20. Solve the equation for x and choose the interval that contains x (if it exists).

$$5 = \sqrt[3]{\frac{24}{e^{7x}}}$$

A. $x \in [-2.71, -2.53]$

B. $x \in [-0.11, 0.1]$

C. $x \in [0.11, 0.24]$

D. There is no Real solution to the equation.

E. None of the above.

21. Solve the equation for x and choose the interval that contains the solution (if it exists).

$$2^{-2x+4} = \left(\frac{1}{9}\right)^{-4x-5}$$

A. $x \in [-1.81, 0.19]$

B. $x \in [-6.5, -1.5]$

C. $x \in [-0.12, 3.88]$

D. $x \in [2.11, 8.11]$

E. There is no Real solution to the equation.

---

22. Solve the equation for x and choose the interval that contains the solution (if it exists).

$$\log_5(-3x + 6) + 5 = 2$$

A. $x \in [81, 84]$

B. $x \in [79, 82]$

C. $x \in [1, 4]$

D. $x \in [-10.33, -1.33]$

E. There is no Real solution to the equation.

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23. Which of the following intervals describes the Domain of the function below?

$$f(x) = -\log_2(x - 2) - 8$$

A. $(-\infty, a), a \in [-5, 0]$

B. $(a, \infty), a \in [0, 5]$

C. $(-\infty, a], a \in [4, 12]$

D. $[a, \infty), a \in [-11, -4]$

E. $(-\infty, \infty)$

---

24. Solve the equation for x and choose the interval that contains the solution (if it exists).

$$2^{3x+2} = \left(\frac{1}{9}\right)^{2x+4}$$

A. $x \in [-2.6, -1.5]$

B. $x \in [-10.9, -9.7]$

C. $x \in [-0.8, 1.4]$

D. $x \in [0.8, 2.2]$

E. There is no Real solution to the equation.

---

25. Which of the following intervals describes the Range of the function below?

$$f(x) = -\log_2(x-1) - 1$$

A. $(-\infty, a), a \in [-0.9, 2.4]$

B. $(-\infty, a), a \in [-1.9, -0.5]$

C. $[a, \infty), a \in [-0.9, 2.4]$

D. $[a, \infty), a \in [-1.9, -0.5]$

E. $(-\infty, \infty)$

---

26. Which of the following intervals describes the Domain of the function below?

$$f(x) = e^{x-6} - 7$$

A. $(-\infty, a], a \in [-9, -5]$

B. $(-\infty, a), a \in [-9, -5]$

C. $[a, \infty), a \in [6, 10]$

D. $(a, \infty), a \in [6, 10]$

E. $(-\infty, \infty)$

---

27. Solve the equation for x and choose the interval that contains the solution (if it exists).

$$\log_3(4x+7) + 6 = 2$$

A. $x \in [-2.75, 0.25]$

B. $x \in [-21.75, -15.75]$

C. $x \in [0.5, 3.5]$

D. $x \in [-14.25, -5.25]$

E. There is no Real solution to the equation.

---

28. Which of the following intervals describes the Range of the function below?

$$f(x) = e^{x-6} - 2$$

A. $(a, \infty), a \in [-3, 0]$

B. $(-\infty, a), a \in [1, 5]$

C. $(-\infty, a], a \in [1, 5]$

D. $[a, \infty), a \in [-3, 0]$

E. $(-\infty, \infty)$

---

29. Solve the equation for x and choose the interval that contains x (if it exists).

$$25 = \sqrt[4]{\frac{10}{e^{5x}}}$$

A. $x \in [1.5, 4.8]$

B. $x \in [-2.1, -0.2]$

C. $x \in [-21.2, -20.2]$

D. There is no Real solution to the equation.

E. None of the above.

---

30. Solve the equation for x and choose the interval that contains x (if it exists).

$$9 = \sqrt[3]{\frac{12}{e^{9x}}}$$

A. $x \in [-3.73, -2.25]$

B. $x \in [-0.66, -0.28]$

C. $x \in [-0.39, -0.07]$

D. There is no Real solution to the equation.

E. None of the above.
